

**Open education practices for Otago Polytechnic: questions for consideration when developing the Graduate Certificate Tertiary Learning and Teaching as an open access course for teachers**



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Worldwide interest in the Otago Polytechnic Graduate Certificate of Tertiary Learning and Teaching (GCTLT), and individual courses that make up the programme, has resulted in Otago Polytechnic considering an open access approach. Consequently, questions need to be answered about the logistics, economic viability and sustainability of this approach to education before Otago Polytechnic launches into this endeavour. This literature review explores the meaning and history of open educational resources (OER) and open education practices (OEP) as well as the issues that need to be addressed when engaging with OEP. This includes how to develop a sustainable model of learning that engages international students in ways that are suitable and affordable for them.

### **What is OER?**

Open Educational Resources is a term that describes educational materials and courses that are made freely available via the Internet (Brown & Adler, 2008). The OER movement started in 2001/02 when the Massachusetts Institute of Technology (MIT) started its OpenCourseWare Initiative (Johansen & Wiley, 2010). This project made materials freely available from over 1,900 of its undergraduate and postgraduate courses. In 2002 the term “OER” was coined by a forum facilitated by UNESCO and the William and Flora Hewlett Foundation. The forum defined OER as:

technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes. They are typically made freely available over the Web or the Internet. Their principal use is by teachers

and educational institutions support course development, but they can also be used directly by students. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabi, curricula and teachers' guides (Wiley, 2007).

At the same time, the Creative Commons copyright framework was developed by Larry Lessig which could be applied to OER materials and incorporated the 'Four Freedoms'; freedom to copy, freedom to modify, freedom to redistribute and freedom to redistribute modified copies (Foote, cited by Downes, 2007).

### **Growth of OER**

Over the last few years there has been a proliferation of OER projects, collaborations and programs. MIT estimated in 2005 that 2,000 open courses had been made available across 50 institutions (MIT, 2006). In 2007, the Organisation for Economic Co-operation Development (OECD) reported over 3,000 open courses were available from over 300 universities (OECD, 2007). In 2010, the Open Course Ware Consortium (OCWC), a group of institutions around the world, published over 8,000 courses online (Johansen & Wiley, 2010). Projects such as Wikieducator and Wikiversity have also contributed to the OER movement by providing places for educators to deposit materials and facilitate educational activities. At the time of writing this report, Wikieducator had 22,000 accounts and 16,858 legitimate content pages (W. Mackintosh, personal communication, September 28, 2011). In the meantime, initiatives have been established to support OER including the Open Educational Quality Initiative (OPAL) (<http://www.oer-quality.org>) which is a partnership between a number of European higher education institutions and organisations such as UNESCO, Open University and MIT. OPAL provides support to institutions and individuals with the aim of improving the quality of OER by maintaining a database of best practice, conferring awards for best practice and contributing to the governance of OER.

### **Enablers and barriers**

The drivers behind individuals and institutions to produce OER are multifaceted (OECD, 2007). Technology and Internet infrastructure have become cheaper which makes it easier to make and distribute education resources. Fiscal constraints make the idea of sharing content

very attractive to cash-strapped educational institutions. Copyright frameworks such as Creative Commons have overcome legal barriers of licensing (OECD, 2007).

Barriers include a lack of access to Internet, hardware and software as well as absence of funding for developing and maintaining OER, especially in developing countries (Wiley & Gurrell, 2009). Educators and institutions do not understand what OER is or how to go about engaging with it. This has been due to a lack of guidelines about how to create OER; lack of technical skills; absent quality assurance systems, and a lack of transparency around practice (Atkins et al, 2007; De Liddo, 2010). In other words, authors of OER do not share their thinking behind OER, what they achieve with it, how it impacts on teaching and learning and what they learned from the experience of creating OER. So the learning behind the OER is not available to others who wish to engage with OER (De Liddo, 2010). Cultural, language and contextual differences as well as concerns about the ethical use of materials impact on decisions to openly publish materials. Teachers are reluctant to give access to materials that will be used by for-profit organisations and may also feel that there is no recognition, support or reward for their work (OPAL, 2011). It is suggested that teachers find it too time-consuming or expensive to re-use materials that are developed in a different language or for a different context (OECD, 2007). This has been backed up by research, such as that carried out by Duncan (2009). When he looked at the Connexions OER repository at Rice University USA, he found that only approximately 25% of material was re-used.

### **Why we should share educational resources**

A number of reasons why educators are being encouraged to engage with OER are apparent. Siemens (2003) argues that OER allows educators to be current and flexible in their response to student needs. OER focuses education on learning rather than fiscal outcomes; encourages educators to collaborate and form communities of practice; is democratic because educators and students choose materials that support their learning as opposed to publishers.

Furthermore, the reasons for OER can be directed at three levels: government, institution and individual teachers (OECD, 2007). The rationale for supporting OER at government level is that it increases access to learning opportunities promotes life-long learning and bridges the gap between formal and informal learning (OECD, 2007).

Institutions should support OER because:

- they have a duty to the tax payer to leverage their funding;
- altruistic sharing is in line with academic tradition;
- the cost of resource development is reduced by sharing and re-distribution;
- potential students will be attracted to an innovative institution;
- new business models need to be developed to deal with increasing competition in education;
- open sharing will stimulate innovation;
- doing nothing may put them at risk in today's rapidly changing environment (OECD, 2007, p. 11).

The motivation for individuals to support OER is that:

- altruistic sharing is part of traditional education values;
- they will develop a reputation for innovation;
- they will increase their capability to be the first in the market;
- it makes sense to have a resource openly accessible (OECD, 2007, p. 12).

### **Moving to open education practices**

Over the last few years emphasis has moved from creating and publishing resources to the educational practices that encompass OER. Educators have been urged to think about how they can facilitate open sharing and collaborative creation which supports life-long learning within the framework of formal education (Kesim, 2008). This sentiment is expressed in the Cape Town Open Education Declaration (2008)

... open education is not limited to just open educational resources. It also draws upon open technologies that facilitate collaborative, flexible learning and the open sharing of teaching practices that empower educators to benefit from the best ideas of their colleagues. It may also grow to include new approaches to assessment, accreditation and collaborative learning. Understanding and embracing innovations like these is critical to the long term vision of this movement.

Open educational practices are defined by the Open Educational Quality Initiative (OPAL) as “practices which support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path (OPAL, 2011). OEP addresses the whole OER governance community: policy makers, managers/administrators of organisations, educational professionals and learners” (2011, p. 12). OPAL (2011) maintains that OEP will result in learning resources and activities being customised to meet learners' individual needs; improvement of education practices and standards, as well as innovation of new pedagogical practices.

Guidelines and strategies about OEP have been developed to support educators. The Open e-Learning Content Observatory Services (OLCOS) project which explored how OER could make a difference to teaching and learning, has produced an open education practices roadmap making a number of recommendations about OEP (Schaffert & Geser, 2008). The suggestion is for educators to change their role from “dispensers of knowledge to facilitators of open educational practices” which focus on students carrying out learning activities designed to develop personal skills, competence and knowledge (Schaffert & Geser, 2008, p. 4). Furthermore, educators should make use of collaborative tools and services, especially those that support the development of learning communities eg blogs , wiki, ePortfolio, RSS as a vehicle to share their experiences and knowledge about OEP in communities of practice (Schaffert & Geser, 2008).

The market for open education practice OEP is seen in research carried out by institutions such as MIT. In 2006, MIT reported the greatest number of people using their open materials were self-learners (46.5%) who accessed materials for their own interest and learning. A smaller number were students (32%) who were formally enrolled in an education course and using the materials to enhance the resources they already had access to, and educators (16%) who used the materials to enhance their own teaching (MIT, 2006). Nevertheless, despite the advances that are being made in OER and OEP by individuals, little impact is apparent at an institutional level (OPAL, 2011). In an international survey of higher education institutions, 581 participants overwhelmingly felt far more thought needed to be put into how OEP could be supported internally, and also that internal OEP strategies needed to be developed, and consideration paid to sustainability (OPAL, 2011).

### **The emergence of the Massive Online Open Course (MOOC)**

Since 2007, the number of online open courses has increased and a new phenomenon called the Massive Online Open Course (MOOC) has emerged, (McAuley, Stewart, Siemens & Cornier, 2010). These courses are facilitated by a range of experts using social media and freely accessible tools (Mackness, Mak, & Williams, 2010). Artefacts from the courses are published freely using Creative Commons licences. They rely heavily on collaboration and cooperation of participants, to support each other, connect and share learning. The term 'MOOC' was coined following the 2008 Connectivism course that was facilitated by George Siemens and Stephen Downes, in which 2200 people participated as informal students, and 24 were enrolled formally (Fini, 2009). (Note: formal students are students who have paid to enrol into a course, complete assignments and receive accreditation. Informal students are people who follow the course for interest, and participate without accreditation). Since then, the term MOOC tends to be applied to any free, facilitated online course that is offered on the Internet, whatever the number of participants enrolled. The similarities with these courses are that the learners self-organise according to their particular learning needs, existing skills and common interests (McAuley et al., 2010).

Several funding models are used for the MOOC approach and are based on whether learning is formal or informal, and the accreditation services provided (See Appendix One for examples of courses representing the MOOC approach). Three examples are presented.

1. No fee for informal learners – the course is designed for learners who are not enrolled in a formal course of study. No prerequisites other than access to the Internet are required. Completion and formal accreditation is not expected. The facilitators offer their time free of charge, and the design and facilitation of the course is not funded.
2. Fee is required if enrolled - the course is designed for formally enrolled students and is also open and free to informal learners. The course is funded by the institution. Informal learners may eventually enrol as formal students for a fee and receive accreditation services if they wish.

3. No fee as externally funded - the course is free, designed for informal learners, and does not lead to accreditation. It is funded by external sources.

### **Participation and completion in MOOCs**

On the surface there appears to be a considerable amount of interest in MOOCs. Although, the 2008 Connectivism course attracted a significant number of participants, particularly informal, completion rates were not high. In a survey of participants (n=80), 15 finished the course and completed all the requirements; 11 were informal students and four were enrolled (Fini, 2009). Participants reported that time constraints were the main barrier to completing the course (2009). In another study of the same course, Mackness et al (2010) surveyed and email interviewed 167 course participants. According to these participants the diversity of communications tools and methodologies was claimed to support the autonomy of the learner. Yet conversely this diversity was also an impediment to students' learning and course completion. The 'chaos' of the course and the disruptive behaviour of some participants resulted in students connecting with just a very small group of people who shared a common interest and with whom they felt safe. They did not engage with the myriad of communication tools that were suggested by the course facilitators but rather relied on a daily email newsletter which was a lot simpler to follow and saved them time. Mackness et al (2010) concluded that whilst online courses, such as the 2008 Connectivism course, are designed for minimum lecturer interaction, they do in fact require moderation and more traditional approaches to communication so that students can easily follow what is happening, and are not threatened by participants who deliberately cause problems. Whether students can still meet the outcomes of a course that operates as a sophisticated online network where students learn in an autonomous, distributed, and socially connected manner is questioned by Mackness et al (2010). Perhaps the two concepts are too opposed to come together for successful outcomes? Further research is required to find out if it is possible to bring together networked learning to meet the constraints of curriculum, learning outcomes and assessment.

### **MOOCs and sustainability**

A further question that has yet to be fully answered is the sustainability of these courses. MOOCs are regarded as the new pedagogical and cost effective way to approach education because they are based on open educational practices (McAuley et al, 2010), but no-one knows how long these courses can continue to rely on volunteer efforts. For instance, Professor Alec Coursos facilitates a course for post-graduate students based in Canada called Social Media and Open Education: <http://eci831.ca>. Coursos relies heavily on informal students to interact with and mentor his formal students. This may work well in 2011, but will it continue to be a viable model as the novelty of this approach wears off? Fini (2009) asks a similar question about the sustainability of lecturer involvement in MOOCs. These courses are designed to include minimal lecturer facilitation and with mentoring, support and 'teaching' expected to be provided by the network of participants. Nevertheless, the reality is that a degree of lecturer moderation and involvement is needed for participants if they are to have a meaningful learning experience, and this includes support around digital literacy (Mackness et al., 2010). Yet how practical and sustainable is it to expect lecturers to moderate artefacts generated by hundreds of students?

At the moment MOOCs are experiments that are being greeted by digital enthusiasts who mostly work in the education field (McAuley et al., 2010). MOOCs are mostly offered by universities in the USA and Canada and are based around topics of digital practice such as social media, use of open content and digital story telling (Appendix One). What continues to be unknown is how a MOOC translates into other topic areas or professions such as business or health (Mackintosh, 2011). Also, MOOCs in their current form do not address the need of students who are unable to access the Internet, or whose first language is not English. Therefore, further investigation of the MOOC concept is needed to establish some parameters for this approach to teaching and learning, and to identify the challenges for teachers who may be faced with facilitating huge numbers of learners.

### **Sustainability of open education practices**

One of the key questions that has yet to be answered is how educational courses can be delivered in an open way to provide learning opportunities and resources for the wider community in a way that meets institutions' financial obligations; somehow open courses



need to generate revenue. Clearly this is a huge concern for institutions that are looking at OEP especially in the light of organisations such as MIT who still require US\$3,500,000 per year to provide OER (Johansen & Wiley, 2010). At this time, there has been an amount of theorising about this but little practical research.

Downes (2007) has posited that the way forward for OEP is for educators to work together in partnerships and communities in one of two ways. One model he suggests is to manage OEP and maintain control over the level of quality through supporting professional staff with the production and distribution of resources. This approach requires a high degree of funding. The second model is co-production, where educators work together to produce materials and resources, often in a voluntary capacity. This model requires a lower level of funding but is likely to result in little control over quality. Also, concerns continue to be voiced about how sustainable this free, volunteer OEP work will be in the future. Wiley (2007) suggests there are several ways to continue to engage volunteers including finding non-monetary incentives, utilising students within a course, decentralising responsibilities across a range of people, and leveraging organisational rewards for participation.

### **Formal and informal enrolments**

One of the main issues that underpins the sustainability of OEP is how to encourage informal students to enrol into a course, receive accreditation and pay fees. An analysis of the financial impacts of open educational practices found that institutions cannot measure the outcomes of OEP by enrolments alone (Blackall & Hegarty, 2011). The costs of running a course and training staff in digital literacy were compared with the return on marketing, advertising and the use of free open tools, and calculations showed that there was a 50% return on OEP (Blackall & Hegarty, 2011). However, it was recognised that factoring in costs such as student support, administration and library services was difficult because these services were not set up to support OEP (Blackall & Hegarty (2011)). A model of OEP was proposed whereby the educator delivers the course materials for 'free', and the cost to the student comes once enrolment for formal accreditation occurs. In this model, the student does not pay for knowledge but for the expert facilitation, accreditation and the privilege of being able to say he or she is a graduate of a certain institution; in other words the student pays for the institution's reputation. Blackall and Hegarty (2011) concluded that to achieve profitable OEP, institutions needed to work out processes for international student fees and options for

the recognition of prior learning, so that informal students could easily move in and out of formal enrolment. This, they believed would increase enrolment and completion rates. There is currently no published research that describes the impact of OEP on paid enrolments.

Conversely, Johansen and Wiley (2010) reported that when the Open University (UK) offered free open sample courses, 7,800 enrolments eventuated in a two year period when students used an 'enrol now' button to convert to full enrolment. This equated to 1,280 new paying students each year out of a total 130,000 students. So far, no one has reported on issues on recruitment or retention using this approach to enrolment. A further initiative is reported by Johansen and Wiley (2010) who analysed how much it would cost the Brigham Young University (USA) (BYU) to convert its distance learning courses to open access courses. Those courses were open admission and open enrolment, and students had up to one year to complete the course and could enrol at any time. Costs to convert the courses included infrastructure, license fees for copyright material, and labour costs involved with preparing the course to be delivered in an open environment. Johansen and Wiley (2010) had estimated that it would cost \$US284 per course. Once the courses went open, they were visited 20,148 times which resulted in 512 paid enrolments (BYU had a total of 165,026 enrolments in 2008). Johansen and Wiley (2010) concluded that it is possible to create financially self-sustaining open courses. However, it is worth noting that these courses were self-directed with no lecturer participation.

Taking OEP a step further is The Open Education Resource University (OERU) which is an initiative just forming at the time of this review. The OERU is a network and partnership of educational institutions around the world that will provide assessment and accreditation services for courses that are made up of OER (Taylor & Mackintosh, 2011). The economic vision is that the financial costs of providing free access to course materials and the accreditation services are recouped on a cost-recovery basis from students. Students will be able to access courses in places such as Wikieducator, and then apply for accreditation from an institution within the OERU network. This will make education more accessible to students and increase revenue for institutions (Taylor & Mackintosh, 2011). This innovation is in the early stages of developing so as yet there is no data available about the efficacy or sustainability of this model.

## Conclusion

The efforts that Otago Polytechnic has made thus far in making the Graduate Certificate in Tertiary Learning and Teaching (GCTLT) openly available conform to the ideals of OER and open education practices. However, despite the increasing interest and development of OER and OEP innovations, there is very little research that illustrates effective practice, or answers questions about economic viability and sustainability. This makes it difficult to know how best to implement open education practices at Otago Polytechnic. Yet at the same time, this is an opportunity to carry out authoritative research and contribute significantly to the discussion about OEP on the international stage. Several research questions have emanated from this literature review, and will be considered as the GCTLT continues to be developed as an open program.

1. Which approach provides the most effective learning experience and attracts the greatest number of fee-paying students? For example: a static, self-directed course that has open-ended enrolment or a facilitated course that has a specific time frame for enrolment and is delivered as a community experience?
2. How can an open facilitated course be designed to provide an effective learning experience when there is no lecturer facilitation or peer interaction?
3. What ratio of informal and formal students is needed to make an open course viable at Otago Polytechnic? (Large universities such as the Open University have been economically successful with their OER models. How can Otago Polytechnic deliver open courses to be viable with a smaller number of students?)
4. How can an open facilitated course be designed so it is sustainable and attracts revenue?
5. What motivates informal students to engage with a course?
6. How can informal learners be supported to convert to formal enrolment and accreditation? (What internal processes are required?)
7. What are the critical factors that motivate students to engage with a course for completion and enrol for accreditation?

8. How can an open course be developed for people when English is not their first language?
9. How can the traditional structures of an institutional course such as curriculum, learning outcomes, assessment and enrolment be applied to networked learning and/or lifelong learning situations, for example, an open facilitated course?
10. How sustainable is OEP based on volunteer efforts?
11. How can an open facilitated course be designed to utilise social media and meet individual learning needs and keep learners engaged as a community/network of learners?

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## Appendix One

Examples of courses representing the MOOC approach

([http://wikieducator.org/OER\\_university/eduMOOC\\_planning\\_group/MOOC\\_comparison](http://wikieducator.org/OER_university/eduMOOC_planning_group/MOOC_comparison))

Code	Date	Course	Institution	Facilitators	For credit option	Estimated No. of Participants	Case study link
eL4C	Feb 2007	<a href="#">Learning4Content pilot workshop</a>	Commonwealth of Learning	Mackintosh	No	148 (check)	<a href="#">Case study eL4C</a>
INST 7150	Fall 2007	<a href="#">Introduction to Open Education</a>	State University of Utah, USA	Wiley	Yes	55 (? for credit)	<a href="#">Case study INST 7150</a>
EC&I 831	Fall 2007	<a href="#">Social Media and Open Education</a>	University of Regina, Canada		Yes	363 (16 for credit)	<a href="#">EC&amp;I 831</a>
	Mar 2008	<a href="#">Composing free and open online education resources</a>	University of Art and Design Helsinki	Leinonen, Poldoja	No	35	
	2008	<a href="#">Facilitating online</a>	Otago Polytechnic	Blackall, Hegarty	Yes	89 (9 for credit)	<a href="#">Case Study OPFO</a>
CCKO8	Fall 2008	<a href="#">Connectivism and Connective Knowledge Online Course</a>	Extended Education and Learning Technologies Centre, University of Manitoba	Siemens, Downes	Yes	+ 2300 (25 for credit - capped)[1] Moodle: 178	<a href="#">Case study CCK</a>
EC&I 831	Winter 2008	<a href="#">Social Media and Open Education</a>	University of Regina, Canada		Yes	? (21 for credit)	<a href="#">EC&amp;I 831</a>
CCKO9	Fall 2009	<a href="#">Connectivism and Connective Knowledge Online</a>	Extended Education and Learning	Siemens, Downes	Yes	? Moodle:	<a href="#">Case study CCK</a>

		<a href="#">Course</a>	Technologies Centre, University of Manitoba			122	
EC&I 831	Winter 2009	<a href="#">Social Media and Open Education</a>	University of Regina, Canada		Yes		<a href="#">EC&amp;I 831</a>
EC&I 831	Fall 2009	<a href="#">Social Media and Open Education</a>	University of Regina, Canada		Yes	347 (16 for credit)	<a href="#">EC&amp;I 831</a>
CritLit	June 2010	<a href="#">Critical Literacies</a>	National Research Council of Canada's Institute for Information Technology (Learning and Collaborative Group)	Kop	No	377	
eL4C41	Jul 2010	<a href="#">Learning4Content</a> (Wikieducator gives back).	OER Foundation	Mackintosh, Schlicht, Mathur, Sharma, Parker, Radney, Jones, Snieckus, Stewart	No	421	<a href="#">Case study eL4C</a>
PLENK2010	Fall 2010	<a href="#">Personal Learning Environments Networks and Knowledge</a>	National Research Council of Canada and TEKRI, Athabasca University	Siemens, Downes, Cormier	No	1610 Moodle: 206	<a href="#">Case study PLENK</a>
OCL4ED	Mar	<a href="#">Open Content Licensing for</a>	OER	Mackintosh,	No	334	<a href="#">Case study</a>



	2011	<a href="#">Educators</a>	Foundation	Hornibrook			<a href="#">OCL4ED</a>
CCK11	Spring 2011	<a href="#">Connectivism and Connective Knowledge Online Course</a>	Extended Education and Learning Technologies Centre, University of Manitoba	Siemens, Downes	No		<a href="#">Case study CCK</a>
LAK11	Spring 2011	<a href="#">Introduction to Learning and Knowledge Analytics</a>	TEKRI, Athabasca University	Siemens, Dron, Cormier, Currie, Elias	No		<a href="#">LAK11</a>
MobiMOOC	Spring 2011	<a href="#">Mobile learning</a>		Traxler, de Waard, Metcalf, Black, Sanford, Duncan, Winters and Brown	No	553 (Google group)	<a href="#">Case study MobiMOOC</a>
DS106	Summer 2011	<a href="#">Digital storytelling</a>	University of Mary Washington	Groom	Yes	?	<a href="#">Case study DS106</a>
eduMOOC	Summer 2011	<a href="#">Online learning today .. and tomorrow</a>	University of Illinois Springfield	Schroeder	No	+2500	<a href="#">Case study EduMOOC</a>